

A PROPOSED DOCTRINE BASED STRUCTURE OF THE ARMORED  
RECONNAISSANCE SQUADRON

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General Studies

by

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

## ABSTRACT

A PROPOSED DOCTRINE BASED STRUCTURE OF THE ARMORED RECONNAISSANCE SQUADRON, by MAJ Joseph Andrechek, 75 pages.

This project analyzed the organization of a Canadian Mechanized Brigade Group's (CMBG) armored reconnaissance squadron and compared how closely its current resourcing and structure match the expected tasks and missions in doctrine. Through content analysis, the study reviewed current doctrine at the formation level, the emerging threat and current armored reconnaissance doctrine. Once the doctrine was analyzed, frequently occurring essential tasks and capabilities were deduced. Each task implied a capability, which should be available to the squadron.

A new structure was proposed based on the deduced required capabilities, utilizing organizational theory and current army practices. This structure advocated the manning of a close reconnaissance troop focusing on dismounted missions and the addition of a mortar troop organic to the squadron. The analysis also concluded that there would have to be continued use of ad hoc attachments for specialist high demand capabilities such as mobility and counter-mobility support.

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## ACRONYMS

AO	Area of Operation
C2	Command and Control
C4ISR	Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance
CA	Canadian Army
CBRN	Chemical Biological Radiological and Nuclear
CIMIC	Civilian Military Cooperation
CMBG	Canadian Mechanized Brigade Group
DND	Department of National Defence
FOO	Forward Observation Officer
HUMINT	Human Intelligence
HUMINT FST	Human Intelligence Field Support Team
IO	International Organization
IR	Information Requirement
ISTAR	Intelligence Surveillance Target Acquisition and Reconnaissance
LoC	Lines of Communication
MEWT	Mobile Electronic Warfare Team
NORAD	North American Aerospace Defense Command
OE	Operational Environment
OP	Observation Post
OPP	Operational Planning Process
SHQ	Squadron Headquarters
UAV	Unmanned Aerial Vehicle
VCP	Vehicle Check Point



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## CHAPTER 1

### INTRODUCTION

If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle.

— Sun Tzu, *The Art of War*

#### Purpose

The objective of this research is to conduct an analysis of a Canadian Mechanized Brigade Group's (CMBG) armored reconnaissance squadron with the view to proposing a doctrinal based organization for the squadron. Frequently ad hoc groupings and just-in-time attachments of other enablers are required to augment the armored reconnaissance squadron's organic capabilities in order for it to achieve its core missions. This use of ad hoc organizations can lend to confusion on the capabilities and scope of employment. Additionally, according to the Canadian Army's<sup>1</sup> own doctrine the risks inherent in an ad hoc organization require that "[they] need time to mature and develop procedures, working relationships and the ability to communicate at the level of shared implicit intent" (DND 2007a, 3-7).

Armored reconnaissance is a key component of the Intelligence, Surveillance, Target Acquisition, and Reconnaissance (ISTAR) process, providing the "sensor-to-

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<sup>1</sup> The Canadian Army recently changed names from Land Forces Command to the Canadian Army; within Canadian doctrine, the term Land Force is still resident in the doctrine and replacement is ongoing through doctrinal reviews and updates. The current term Canadian Army is used throughout this document and should be understood when Land Forces appears in doctrine.

shooter [link]' in order to engage fleeting time-sensitive targets" (DND 2013, 3-7).

Because the armored reconnaissance squadron is one of the largest organizations in the ISTAR process, frequently all other ISTAR assets are grouped within it. Despite the common purpose of all ISTAR assets to provide data, they do not provide synergy when grouped but actually detract from the squadron's mobility and speed of reaction. A thorough understanding of the reconnaissance squadron's task and purpose will illustrate how grouping all ISTAR assets within the squadron is inefficient.

It is with these two key deficiencies: a lack of a defined force employment organization, and improper understanding of an armored reconnaissance squadron's role in the ISTAR process, that motivate the author to conduct a research into the roles, tasks, and capabilities required of an armored reconnaissance squadron.

### Background

"The Brigade Reconnaissance Squadron is the brigade's principal maneuver 'find'<sup>2</sup> asset. It can operate mounted to provide a responsive find capability for high tempo maneuver or, dismounted, to work alongside Human Intelligence (HUMINT) assets. As a find force, the Brigade Recce [Reconnaissance] Squadron should be carefully integrated within the brigade's overall find effort" (DND 2016, 1-9). At present in the Canadian Army, there are three CMBGs, each one composed of four maneuver units: two mechanized infantry battalions, a light infantry battalion and an armored regiment, which

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<sup>2</sup> Find, fix, and strike are the core functions in the application of combat power. The need to be prepared to exploit is implicit. Finding and fixing the adversary or any other target will contribute to shaping. Striking and exploiting have the potential to be decisive (DND 2008b). It is in this context that the Brigade Reconnaissance Squadron is the principle find asset.

in the Canadian Army is a battalion-sized organization. The Armored regiments in the CMBGs provide a battlegroup headquarters, and a mix of tank and armored reconnaissance squadrons. Although the three CMBGs are symmetrical with respect to their constituent units, the three armored regiments are not, which results in the following asymmetry. In 1 CMBG the armored regiment is composed of two tank squadrons and an armored reconnaissance squadron, the 2 CMBG armored regiment is composed of three armored reconnaissance squadrons and a tank squadron, whilst the 5 CMBG armored regiment comprises three armored reconnaissance squadrons (Childs 2012).

With only three total CMBGs and seven available armored reconnaissance squadrons, there are more squadrons than required in doctrine for the existing CMBGs. Additionally, unlike a tank squadron, whose construct within the Canadian Army is a standard organization with a set doctrine and structure that is aligned to achieve the expected missions and tasks it would potentially receive, an armored reconnaissance squadron's construct is viewed as a more flexible and fluid organization. Although there are nominally seven squadrons, they are not symmetrically resourced and in fact the scale of issue of equipment and type varies from squadron to squadron. Further, the authorized manning levels vary within the separate squadrons.

#### Statement of the Problem

“In addition to their find capability, the Brigade Reconnaissance Squadron offers the brigade significant broader utility. It can operate in intimate support in certain circumstances, conduct economy of effort operations in the brigade area of operations, provide route security, flank security, or form an exploitation force” (DND 2016, 1-10). The brigade reconnaissance squadron is a key enabler of the CMBG; it is the only

directly responsive maneuver sub-unit to the brigade commander allowing an immediate response while more deliberate plans or actions are developed.

It is imperative that there is a commonly understood doctrinally acceptable squadron organization defined by capabilities that can sufficiently achieve the tasks expected of a brigade armored reconnaissance squadron without significant augmentation. The Canadian Army would then be better postured to balance the composition of its armored regiments to furnish appropriately resourced and equipped squadrons to meet mission requirements within the current operating environment. To that end, this analysis will seek to answer: what is the optimal mix of organic capabilities necessary to constitute a CMBG's armored reconnaissance squadron?

The sub-questions investigated to facilitate answering the main question regarding the mix of organic capabilities are: (1) what does current Canadian doctrine advocate; (2) are ad hoc groupings realistic and sufficient; and (3) how should capabilities be structured within a squadron construct?

### Assumptions

A few key assumptions are required in order to conduct this analysis. First, the employment and fundamental of Canadian Army SENSE doctrine will not significantly change.<sup>3</sup> This is to say that the Canadian Army will not change the role or expectation for

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<sup>3</sup> The operational combat functions are COMMAND, SENSE, ACT, SUSTAIN and SHIELD and are applicable at all levels of war: strategic, operational and tactical. The COMMAND operational function integrates all the other operational functions through understanding of commander's intent. SENSE is the function that provides the commander with knowledge, which leads to commander's understanding. ACT integrates maneuver, firepower and information operations (influence activities) to achieve the desired battlespace effects. SUSTAIN is the operational function that integrates strategic, operational and tactical levels of support to generate and maintain force capability and

armored reconnaissance to become more aggressive in the style of U. S. Cavalry units. Further, continued emphasis on reconnaissance through stealth will remain a foundation, although the capability to operate more offensively remains given the appropriate enemy and force overmatch. Second, the constituent military occupations structure within an armored reconnaissance unit will, with respect to the primary trade, remain crewman and armored officers. Next, the research utilizes the most current draft of *Brigade Tactics (Draft)* scheduled for release in 2017. In using this publication, the assumption is that there will be no significant change between now and the release date and if there are any changes, they will not affect the analysis conducted herein. Finally with respect to this analysis, reference to grouping or organizations will be undertaken from the perspective of human capital or systems that serve to achieve goals and not merely grouping items or collections of things.

### Definitions

In order to proceed with the analysis, a couple of key terms and concepts need explanation. First, SENSE is an operational function, equivalent in nature to a U. S. warfighting function that provides the commander with knowledge. It encompasses all elements that collect information and then applies analysis to create the knowledge for the commander. “This operational function is inherently modular, capable of integrating additional systems and capabilities at every level: tactical, operational or strategic. The

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incorporates health care and welfare systems and procedures. SHIELD provides for the protection of a force’s survivability and freedom of action, and it includes force protection measures (DND 2008b). In order to differentiate between the common utilization and the proper noun the combat function will be denoted in capitals.

scope of the SENSE function must be broad in order to firstly provide the commander with a broad and deep knowledge base of the operational environment, and secondly, to assess the effects of activities across all elements within the environment” (DND 2008b, 4-19).

Secondly, ISTAR is the process through which the demands of the SENSE function made by the commander are satisfied. “The role of ISTAR is to provide a unifying framework within which to a) coordinate information collection requirements, b) task specific collectors to collect that information and c) process collected information to generate intelligence in support of decision-making, which includes the cueing of maneuver, strike and/or other ISTAR assets” (DND 2013, 2-1 to 2-2). It is within this process supporting the SENSE function in which the armored reconnaissance squadron is predominantly employed.

Finally, a doctrinal note. In Canadian doctrine and terminology,<sup>4</sup> reconnaissance is often shortened to merely recce and is in such use that it now appears routinely in approved doctrine such as *Ground Manoeuvre Reconnaissance*, and as such whenever the term recce is seen in a quotation or reference, it should be interpreted to read reconnaissance.

### Scope

This analysis will focus primarily on the capabilities required in an armored reconnaissance squadron employed by a CMBG. For the sake of context and comparison,

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<sup>4</sup> Additionally, throughout this document the American spelling of words like defense, armor and maneuver is used; except when the Canadian spelling appears in citations from doctrine or when referencing the names of doctrinal manuals.



historical squadron organization and organic capability will be restricted to operations and exercises conducted between operational deployments to Kosovo circa 1999 and to the present. The reason for this field of view is that it encompasses the widespread use of the Coyote reconnaissance vehicle, which has served as the primary reconnaissance platform for the past 20 years. This allows more concrete conclusions to be made, as there is no requirement to account for differences in platform capabilities.

### Limitations

Due to the nature of the methodology that will be used to analyze the proposed research questions, an implied limitation needs to be acknowledged and explained. As will be more fully illustrated in chapter 3, the methodology to be used is content analysis. Content analysis requires a base source document or fount of information. During the execution of this project, it is incumbent to accept that current doctrine is relevant, acceptable and accurately describes the battlespace, battle conditions and the expected manner, conduct and sequence of employment. Given that doctrine will evolve and change means that this analysis is only valid for the doctrine it uses. This limitation does not imply irrelevance of the analysis or proposed solution but illustrates that form follows function. As doctrine evolves and changes so to must the organizations, structure and capabilities in the organizations.

### Delimitations

This analysis will focus on the capabilities required in an armored reconnaissance squadron; it will not delve into where those capabilities come from nor how they are to be acquired. If the analysis determines that a specific capability is required such as a sniper

capability; then the requirement of the skill set and the size of organization will be determined. However, a discussion to determine which branch or military occupation specialty a capability could be sourced is beyond the scope of this research.

Analysis of historical brigade armored reconnaissance squadrons will be limited to those squadrons that have been force generated and employed by a brigade level headquarters. As such, excluded from this are squadrons employed as part of a battle group for the duration of a mission.

Additionally, the research and analysis will focus on the regular force component of the Canadian Army as the reserve component follows suit of the concept and principle in the regular component.

### Significance

This research is of military significance to the Canadian Army specifically and to our allies generally, as it will endeavor to illustrate a manner of doctrinally grounding capabilities required in an organization. Due to manning and resourcing shortfalls and a force generating and force employment system that are out of synchronization, the armored reconnaissance squadron is often under resourced during daily garrison duties outside of the force employment window.<sup>5</sup> When selected for force generation by its regiment, a squadron's organic capabilities are frequently, insufficient to accomplish all tasks expected. By completing an analysis of tasks both assigned and implied then a

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<sup>5</sup> Force Generation is the process of organizing, training and equipping of units and organizations for operations and deployments. Force employment begins when the organization is ready and command authority is transferred to the headquarters conducting the operations. This headquarters is known as the force employer (DND 2010).

verifiable and concrete capabilities requirement can be advanced and with it, a proposed organizational structure.

## CHAPTER 2

### LITERATURE REVIEW

Wise people learn when they can; fools learn when they must.

— Arthur Wellesley, First Duke of Wellington

The goal of this chapter is to provide context for the analysis that will follow on the capabilities required within the brigade armored reconnaissance squadron. That context will necessarily focus on the operational environment, the tasks expected and inferred from current doctrine that the squadron is required to accomplish, recent operational experiences and emerging trends in the employment of armored reconnaissance squadrons, and finally a review of organizational theory. This review of theoretical organizational practices and its application to the military will serve to permit rational and proven organizational models to be proposed during the analysis. Further, during the analysis it will serve as a metric against which the existing organizations can be measured.

#### Operational Environment

The Operational Environment (OE) that an armored reconnaissance squadron is expected to operate in is a complex and ever evolving dynamic battlespace. To understand how one arrives at this complex OE it is imperative that one begins at the national strategic level. The Government of Canada has typically assigned three enduring roles to the Canadian Armed Forces articulated in the *Canada First Defence Strategy*:

Defend Canada by operating across the length and breadth of Canada as necessary; be a strong and reliable partner in the defence of North America; and, contribute to international peace and security by making meaningful contributions to expeditionary operations. These roles imply that the Canadian Armed Forces must be able to undertake operations ranging from the provision of humanitarian

assistance to the employment of combat capabilities against any adversaries that may seek to threaten Canada's national interests. (DND 2008b, 7)

These roles are achieved through six *Canada First Defense Strategy* Missions:

Conduct daily domestic and continental operations, including in the Arctic and through NORAD; Support a major international event in Canada, such as the Olympics; Respond to a major terrorist attack; Support civilian authorities during a crisis in Canada such as a natural disaster; Lead and/or conduct a major international operation for an extended period; and Deploy forces in response to crises elsewhere in the world for shorter periods. (DND 2008a, 3)

These missions are grouped at the Canadian Army level in four lines of operation;

Line of Operation 1 is Domestic Operations (Routine) encompassing *Canada First Defence Strategy* missions one, three and four. Line of Operation 2 is Domestic Operations specific to mission two. Line of Operation 3 is Major International Operation (Sustained) addressing specifically mission five, and finally Line of Operation 4 is Minor International Operation (Surge) encapsulating mission six (DND 2014b).

The roles and mission laid out easily lead to army units as part of the whole of government team deployed in a wide range of military operations, spanning from humanitarian assistance to combat missions. These missions will be accomplished throughout a wide variety of physical environments "such as arctic, mountainous, littoral, forest, open savannah, or urban. As campaigns may cover vast areas, land forces may operate across various physical environments" (DND 2008b, 2-2). Another complicating factor is that since the industrial revolution, populations have steadily migrated from rural to urban areas in search of jobs and an increased standard of living. This trend in urbanization has led to increasingly larger cities dominating global Gross Domestic Product and becoming key terrain to secure lines of communication and economic power within a particular region.

The nature of conducting operations in large urban environments will continue to challenge the Canadian Armed Forces and place a premium on joint enablers, including Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), operational support, aviation and the timely application of precision effects. . . . Effective force protection will continue to be difficult to achieve in such terrain. (DND 2014a, 50)

Within the OE, an armored reconnaissance squadron as part of the land force is expected to operate and interact with a large and diverse number of agents. These agents can be categorized as other states and non-state actors, each being constituent with a number of subcategories. In terms of states, these will in general be sub-divided into one of three categories: state partners such as allies and coalition members, host nation supports, and adversarial states, which may be overtly or covertly conducting operations against land forces or Canadian national interests that the land force will have to counter (DND 2014a). The non-state actors include three general classifications: non-state adversarial, non-state non-adversarial and International Organizations (IO). Non-state adversarial are groups that oppose the interest and priorities of Canada and its partners; these groups include violent extremist organizations and criminal organizations. Non-state non-adversarial are groups that are not opposed to Canadian interests, and Canada or its partners may cooperate or employ these groups; such as private military contractors, providing security or logistics support. IOs are organizations that have their own objectives, goals and funding within the OE and their objective and interest may align or overlap with Canadian or coalition missions and priorities (DND 2010).

Understanding the agents that are supplying forces and energy into the OE; there are two types of threats that can be projected to cause effects in the battle space and counter Canadian national interests. These are conventional threats and irregular threats

according to *Land Operations*, which informs the threat model for subsequent Canadian Army Doctrine:

Conventional adversary will have a definitive structure and identifiable order of battle. It will likely be an extension of a political government and have a recognizable, institutional doctrine, known rules of engagement, and known intelligence assets. In other words, it will be a recognizable military force; and the irregular adversary will not likely be tied to a particular nation-state although it may have political aims. Understanding that it will suffer defeat within the battlespace from a conventional force, it will utilize asymmetric tactics that seek strategic effects and outcomes in pursuit of its political aim. Some irregular adversaries may not seek outright defeat or victory, but simply wish to maintain an unstable environment for their own gain. (DND 2008b, 2-9)

Given the mission sets and lines of operation, the physical environment and the agents operating in the battlespace, one can now develop a picture of the OE within which an armored reconnaissance squadron will be expected to operate. The projected OE will be characterized as a complex environment. It will consist of a physical environment that will be comprised of at least one major urban center within which operations must be conducted. This will be compounded by the specific physical obstacles presented by the weather and terrain itself. The threat is a multi-faceted one, consisting of both conventional and irregular elements. These threats represent elements that directly oppose the imposition of Canadian, coalition and allied objectives.

*Canada First Defence Strategy* articulates “the Canadian Forces will participate, where circumstances dictate, in missions with like-minded states as a responsible member of the international community” (DND 2008a, 9). Further, “combined operations, operations conducted by forces of two or more nations acting together, are increasingly the norm for expeditionary operations” (DND 2010, 7-1). Moreover, in *Waypoint 2018: The Canadian Army Advancing Toward Land Operations 2021*, the Canadian Army’s Blue Print for its future force design includes coalition partners as one of the assumptions

in its future force design. These multinational operations will present additional challenges to the squadron, as it will need to work through inter-operability issues including communications systems, language and tactics. Another significant factor that a force will have to contend with is the local civilian population. “[I]t is essential that commanders at all levels, but specifically at the tactical level that will have daily contact with the local community, consider the effects that operations will have on civilians and their infrastructure” (DND 2008b, 2-2).

Figure 1. Land Operations Force Element



Overall, the complexity of the OE will have an impact on the squadron and it must be robust enough to operate securely while also conducting the tasks expected and assigned to it. This translates to an armored reconnaissance squadron capable of independent operations for limited duration with sufficient organic resource to accomplish those missions and tasks.

### Tasks Expected of an Armored Reconnaissance Squadron

Within the missions and tasks set out in the *Canada First Defence Strategy* there are several overarching campaign themes within the spectrum of operations. These are major combat, counter-insurgency, peace support operation, peacetime military engagement and limited interventions. Major combat is characterized by combat that is frequent, widespread and intense. It will usually be conducted against other formal, conventional military forces. Counter-insurgency operations are characterized by a need to address multiple facets of the environment and the root causes of the crisis in the midst of an irregular-based adversary capable of combat that is less than that of major combat. Peace support operations, which may include conflict prevention, peacemaking, peace enforcement, peacekeeping, or peace building in support of trans-governmental organizations<sup>6</sup> seek to restore or maintain peace and order. Peacetime military engagement are military activity in peacetime that involves cooperation with other nations or agencies. These engagements seek to improve the security apparatus and institutions of another nation or region through engagement, joint training or capacity

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<sup>6</sup> Trans-governmental organizations are IO such as NATO, the UN and its subordinate organizations, European Union, African Union and the like.

building. Limited intervention consists of operations that have limited objectives and scope. They are usually conducted with a specific, limited aim and for a short duration, often numbered in days. Most domestic operations are classified as limited intervention (DND 2008b, 3-10).

Within these general campaign themes, the four types of tactical activities: offense, defense, stability, and enabling operations occur to various degrees depending on the level of conflict. With respect to reconnaissance, “Recce operations carried out by specific recce forces are viewed as enabling activities that occur across the entire spectrum of operations, and apply to all land tactical operations” (DND 2015b, 1-2-2). The primary role of reconnaissance forces is to gain information in support of a commander. They typically do not fight for information but obtain it through stealth, surveillance, and other passive means. Reconnaissance operations are intimately tied in with the intelligence cycle. As such, reconnaissance forces “normally execute their missions while planning is ongoing for the forthcoming mission and are then re-tasked to support follow-on missions with little or no opportunity for recovery” (DND 2015b, 1-2-3). As an enabler of other tactical operations, and given that they are frequently tasked during mission planning, reconnaissance forces are required to be structured to operate independent of the force they are supporting.

Within Canadian Army doctrine, there are four core capabilities of reconnaissance forces. They are reconnaissance, surveillance, counter-reconnaissance, and population engagement. Reconnaissance includes traditional activities such as route, area, point and zone reconnaissance, reconnaissance in force, and Chemical Biological Radiological and Nuclear (CBRN) reconnaissance. Surveillance is the systematic observation of aerospace,

surface or subsurface areas, places, persons or things, by visual, aural, electronic, photographic, or other means. Typical tasks include but are not limited to conducting screens and operating observation posts (OPs). Counter-reconnaissance is the identification, targeting, and destruction and/or neutralization of adversary SENSE assets. This activity is generally conducted as security tasks such as guards, covering forces and flank protection. Counter-reconnaissance also involves passive activities, such as camouflage and employing deception techniques. Population engagement is the gathering of information from human sources, from either indigenous personnel, detainees or third party witnesses. It is most often executed through dismounted patrolling in urban areas (DND 2015b, 1-3-3).

These core capabilities translate into specific tasks more accurately when viewed through the lens of an armored reconnaissance squadron employed, doctrinally, within the CMBG. “The role of the armored recce squadron is to obtain timely and accurate information which both satisfies the commander’s IRs [information requirements] and is received quickly enough to be incorporated in the commander’s estimate or operational planning process (OPP)” (DND 2015b, 2-1-1). The armored reconnaissance squadron is the CMBG’s primary ground-based SENSE asset but additionally the squadron is expected by the brigade to “operate in intimate support in certain circumstances, conduct economy of effort operations in the brigade AO, provide route security, flank security, or form an exploitation force” (DND 2016, 1-9). This clearly expands the expected role of a squadron and the tasks, which in turn serves to drive the force structure.

Despite being a squadron-sized organization, the brigade armored reconnaissance squadron is considered a unit during operations. This means that the squadron

commander works directly for the brigade commander, attends brigade orders groups, and is treated as a distinct element in the allocation of resources. It will not however, have a Commanding Officer and the corresponding authorities with respect to discipline, financial authorities, and *etcetera*. A unit in the CMBG is the smallest grouping capable of independent operations with organic capability and contains integral combat support and combat service support elements (DND 2016, 1-11). In fact, “the armored recce squadron is generally characterized by mobility, light protection, communications, and firepower. They can fulfill a variety of combat roles, but their primary task is information gathering” (DND 2015b, 2-1-1). Therefore, the squadron must be capable of furnishing all the combat support and service support required to operate independently of the brigade whilst completing its mission without growing to a battalion-sized organization.

Given the core capabilities expected of reconnaissance forces, the specific tasks and capabilities that have been derived and articulated for an armored reconnaissance squadron are:

To provide all-weather, continuous, accurate, and timely recce in complex terrain. Squadrons are prepared to gather information about multi-dimensional threats, both conventional and irregular. Armored recce squadrons must be capable of surveillance and target acquisition and, after detection and identification, be able to direct fire using a “sensor to shooter” capability. They must also be able to conduct recce tasks where sensors cannot gain information. Recce elements must also provide an initial analysis of what they are detecting. (DND 2015b, 2-1-2)

Table 1 lists the primary tasks assigned to an armored reconnaissance squadron and include but are not limited to:

Table 1. Primary Task of an Armored Reconnaissance Squadron

Recce Tasks	Surveillance Tasks	Security Tasks	Additional Tasks
route recce	screens (mobile and static)	lines of communication security (non-linear)	support to cordon and search operations
area recce	OPs (overt and concealed)	presence/framework patrolling	support to offensive and defensive operations such as attacks, fire bases, mounted ambushes, raids and blocking forces
point recce		guard**	
zone recce		flank security***	
recce-in-force*		convoy/VIP escort	
counter-recce*		movement control operations (including roadblocks, snap and deliberate vehicle checkpoints (VCPs), and traffic control operations)	
CBRN recce		vital point and critical infrastructure security	
*will require manoeuvre arms based on the adversary situation			
**participating with other manoeuvre arms			
***if grouped accordingly with additional manoeuvre assets or fire support elements			

Source: Department of National Defence, *B-GL-394-002/FP-001, Ground Manoeuvre Reconnaissance* (Kingston, ON: Canadian Army Doctrine and Training Centre, 2015), 2-1-9.

Given these tasks and competencies, a generic armored reconnaissance squadron is defined as an organization that operates independently for periods with organic support elements. It is flexible, capable of deploying quickly with minimal direction to execute tasks for the brigade commander that are essential to the planning process or the security of the formation as it re-aligns itself for its next mission or task. With this extensive task expectation at the squadron level it is essential that it is can sustain an operational tempo characterized by rapid and dynamic taskings and re-tasking with very compressed battle procedure timelines.

### Current Organizational Structure and Context

*Ground Manoeuvre Reconnaissance* presents a doctrinal armored reconnaissance squadron. This doctrinal squadron is designed to be force generated by its parent regiment or brigade and is not ready for immediate force employment. It is composed of three armored reconnaissance troops (medium mounted) of eight armored fighting vehicles (reconnaissance variant) which are further broken down into three two-vehicle patrols and one command patrol. A light mounted armored reconnaissance troop that is also broken down into three two-vehicle patrols and one command patrol, however it is neither manned nor equipped within the squadron. Its employment is primarily to complete any dismounted tasks or to cover gaps between the medium mounted troops. There is an administrative troop composed of a transport section with the necessary vehicles to carry supplies of various classes, a maintenance section needed to conduct first line repair and recovery, and a medical section composed of the squadron's two ambulances. The squadron is completed with a squadron headquarters consisting of the primary and alternate command posts, the officer commanding, and the liaison officer and his team. This headquarters is a robust organization capable of exercising command and control over a wide variety of subordinates and can temporarily exercise command and control over a much larger force than the assets organic to the squadron. Additionally, Figure 2 illustrates a number of other capabilities in dashed boxes. A squadron could receive these potential attachments based on the mission, task or operations. These additions are often found operating with the squadron on an ad hoc basis and some capabilities are frequently grouped with the squadron for employment but not during force generation or administration during routine garrison duties.

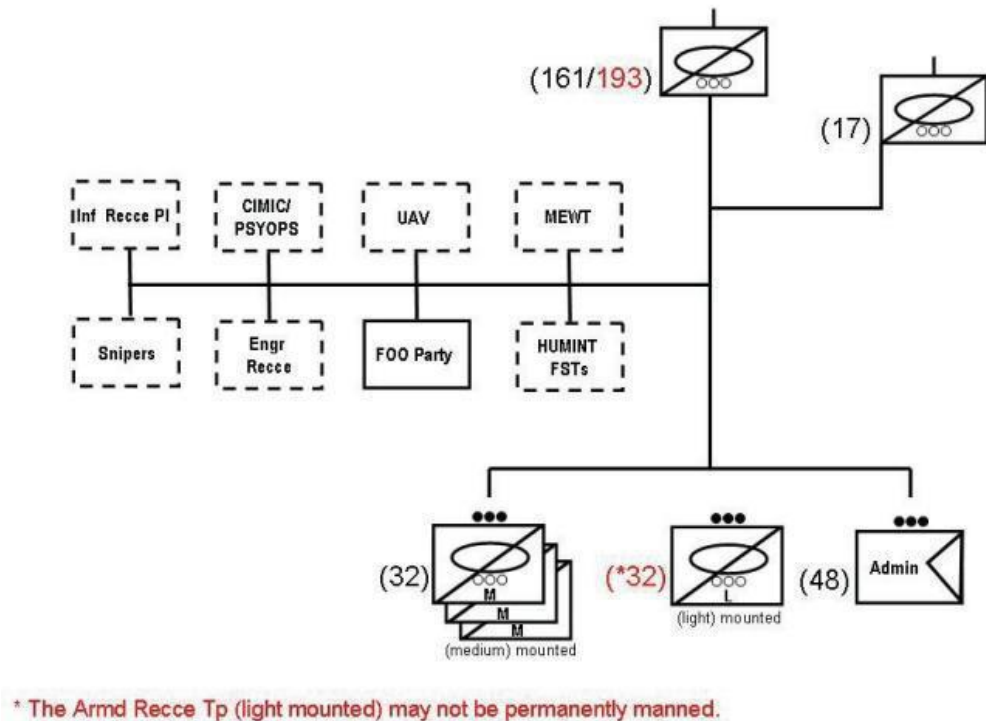


Figure 2. Doctrinal Armored Reconnaissance Organization

Source: Department of National Defence, B-GL-394-002/FP-001, *Ground Manoeuvre Reconnaissance*. (Kingston, ON: Canadian Army Doctrine and Training Centre, 2015).

This doctrinal armored reconnaissance squadron like Don Quixote's mythical windmill giants is an organization that exists in theory but not in reality (Saavedra 2003). Prior to force generation the squadrons were not equipped and manned in accordance with the organic troops outlined in doctrine. During force generation they do not receive the additional troops and during force employment they are expected to achieve all doctrinal mission sets.

During Operation KINETIC, Canada's contribution to the NATO-led intervention in Kosovo an armored reconnaissance squadron was part of the declared assets and was attached to Multi-National Brigade (Center), at the time a British-led brigade, for

employment in its doctrinal role. This squadron was not equipped in a manner that approached the organization outlined in figure two. Instead it was composed of three five vehicle armored reconnaissance troops, a standard squadron headquarters, administration troop and an assault troop composed of three ten-man sections in an armored section carrier (Hunt 2000, 67).

Between 2002 and 2010, the armored reconnaissance squadron as part of Canada's declared force in Afghanistan varied greatly. In fact:

Sqns [squadrons] have ranged in size and structure from a single eight car Coyote Troop; to two eight car Coyote troops; to a non-doctrinal Intelligence Surveillance Target Acquisition and Reconnaissance (ISTAR) Squadron (Sqn) comprised of various SENSE platforms to include Armored Recce as well as variations of troop numbers with either an Infantry Recce Platoon (PI) or Snipers attached. The structure and capabilities of the Sqn Headquarters (SHQ) and echelon have also varied in composition such that they have directly impacted the operational flexibility of the Sqn Commander and ultimately the freedom of action. (Tremblay 2010, 6)

As Canada withdrew from Afghanistan in 2010 and its combat operations were wound down, the Royal Canadian Armored School, based on upcoming capabilities, began exploring the integration of Micro Unmanned Aerial Vehicles into armored reconnaissance squadrons (Cobbett 2012). Additionally, as Canada continued to exercise and train high readiness contingency forces, the reconnaissance squadron continued to be undermanned and under equipped from its doctrinal organization. With the lessons from Afghanistan, the Canadian Army neither implemented structural reforms in light of experience, nor did it capitalize on the opportunity to incorporate emerging capabilities. In preparation for Exercise MAPLE RESOLVE 1401<sup>7</sup>, the armored reconnaissance

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<sup>7</sup> The MAPLE RESOLVE series of exercise are a culminating and confirmation activity for brigades and battlegroups in the Canadian Army prior to them entering a high



squadron deployed with its headquarters, administrative troop, and only three five vehicle armored reconnaissance troops (Burchat 2014, 27).

Currently doctrine and theory advocate robust reconnaissance troops in the squadron, however the reality is that squadrons are non-standard and often undermanned to accomplish the tasks commanders expect of them. This situation does not reflect poorly on doctrine, but only because the Canadian Army has not followed the doctrine it advocates. Forces are frequently given troop number restriction and with it different commanders place different emphasis on troop staffing priorities. Frequently the emphasis is placed on the battlegroup and its supporting assets; since the armored reconnaissance squadron is not a member of the battlegroup but of a higher formation, it is often the organization from which the troop limits are paid. The author's own experience of this was observed during Operation ATHENA Rotation 3<sup>8</sup> in Kabul, Afghanistan. During that deployment the Reconnaissance squadron was part of the Kabul Multinational Brigade, however the light reconnaissance platoon was taken from the squadron and attached to the force protection company. It then proceeded to patrol outside of the camp in another battalion's AO. Additionally, with more armored reconnaissance squadrons in the Canadian Army than are required, there is a distribution of limited resources to give each squadron some capability to permit experience of commanders and career progression, but to the detriment of effectiveness and efficiency.

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readiness cycle. Once complete they are ready for force employment if a need arises and require only theatre specific mission training.

<sup>8</sup> Operation ATHENA was Canada's name for its mission in Afghanistan from 2003 to 2011.

From this, it can be seen that the basis of any review of a squadron structure must take into account current doctrine, and assume that there will be a lack of additional forces to augment it. The deduction is that the armored reconnaissance squadron should be capable of being force employed with its organic resources. To caveat this though Figure 1 shows the armored reconnaissance squadron as a Canadian Army enabling element, not part of the battlegroup. This illustrates that the Canadian Army recognizes the doctrinal role of the squadron, which now puts greater emphasis on this analysis to link structure to doctrinally based task.

### Organizational Theory

Since earliest history, humankind has coalesced together to form groups to most appropriately address the challenges of their time. As society became more complex, the organizations they constructed became more detailed, structured and correspondingly complex to govern nations, conduct trade and wage war. As society and humanity developed and increased the amount of resources they used, subjugated, and controlled, it necessitated a proportional development in the construct of organizations in order to maximize effectiveness and control.

An organization is defined as “a systematic arrangement” (Hanks 1998, 576). Organizing is then merely a process of grouping people, functions and things into some logical collection according to some desired outcome. Grouping can be executed to facilitate control, communications, function or output of a collection. Recall, that for the purpose of this analysis the assumption is that any reference to grouping or organizations will be from the perspective of human capital or systems that serve to achieve goals and not merely grouping items or collections of things.

Theory presents three basic forms of organizing groups: grouping by activity, grouping by output, and grouping by geography. “Organization design involves decisions about the configuration of the formal organizational arrangements, including the formal structures, processes, and systems that make up an organization” (Nadler 1997, 23). Each form of grouping has its role and use dependent on the situation.

Grouping by activity is a form of organization in which all individuals within the group share work process, functions or disciplines (Nadler 1997). Within army organizations, companies, batteries and squadrons for the most part are groupings by activity. They are generally, other than a small percentage, a homogenous organization based on a specific military occupation specialty be it infantry, artillery or armored. Infantry soldiers, as a discipline, are all the same, with the role to close with and destroy the enemy. Any subtask that they perform in combat operations are contributing to that defining role or activity. Grouping by activity is an easy way to organize people. It puts like things together with the concept that the manager or leader of that group will be able to coordinate the work and output of the group. It facilitates easy communications with the activity but communications between other activity groups as part of a larger organization are somewhat less simplistic. Additionally, coordination of group activities and outputs are only successful if the tasks and expected outputs are within the realm of the feasible for that discipline or activity.

The second organizational method is grouping by output. “In output-focused organizations, the primary goals focus on the product or service. Influence is dominated by those concerned with output integrity” (Nadler 1997, 56). This form of organization focuses on the result of work by the group. A vehicle maintenance organization is a

typical grouping by output. It will generally have mechanics, welders, painters and other specialist technicians that contribute to the upkeep and constant running of a supported organizations vehicles.

The final organizational method, is grouping by geography. In this organization, the group is composed of a variety of members that enable it to work independent of its parent organization accomplishing or producing all needs or services required and being responsible for a specific area or geographically bound area. A franchisee of a restaurant chain is an example of geographic grouping. It is equipped to provide all functions required to run a business and typically services a given area. It mirrors the parent organization with servers, management, ordering and accounting facilities. A drawback of this type of organization is that there is redundancy in replicating functions in each geographic area such as auditing or contracting.

Traditionally these three basic structures for organization were independent of each other but with multi-tiered organizations, these organizational methods can be combined. Militarily, a CMBG is organized geographically to operate as an independent organization, mirroring the functions of its parent division. A battalion in garrison is a grouping by activity putting like things together for ease of administration and training. When a battlegroup is made by cross attaching other combat arms into the base battalion, it now represents a grouping by output; its goal is the achievement of assigned objectives.

Understanding the fundamentals of organization and how they are principally applied within society writ large is one aspect of this analysis. However, a further refinement of the general theory is required so that during the analysis of an armored reconnaissance squadron's proposed structure it is specific and relevant to military

operations, concepts and current command structures. Deriving from organizational and leadership theory, best practices and a history of control, army organizational practice advocates that “an organization should have a clear role. In addition, all organizations have a human aspect; they therefore require some degree of discipline within a defined structure” (DND 2007a, 3-1).

To accomplish this, the army focuses on two key elements for creating organizations: span of control and force structure. The span of control is the number of direct subordinate organizations any individual command node can directly supervise, task and control. Within Canadian Army doctrine, the consensus on effective span of control is a ratio of four to five subordinate nodes per headquarters (DND 2007a). Through the chain of command and use of subordinate commanders, or headquarters the final span of control can be vastly multiplied to a large number of physical maneuver elements in the battlespace.

Concerning force structure, Canadian Army doctrine recommends that “in principle, forces should be structured with the capability for independent action. The cohesion, and thus the effectiveness of a command rests upon integrating its component parts to optimize its overall capability” (DND 2007a). With respect to military organizations and operations, this means that they possess or have access to support arms to enable any maneuver, indirect fire, and service support to provide sustainment functions.

Given the range of options in creating organizations, the Canadian Army has in essence chosen geographically grouped organizations designed to operate independent of their parent organization for a time with all the appropriate resources and elements to

execute their tasks. In accordance with the limitation a commander has on the number of directly supervised subordinates and the style of grouping advocated by army doctrine; the optimal generic unit will consist of a commander with a supporting headquarters element, and five direct report sub-organizations. These sub-organizations will need the ability to access indirect fire support, integral maintenance and logistics capabilities and key enablers to maneuver and execute their mission.

### Summary

This chapter provided the background and context required to conduct an analysis of capabilities needed for an armored reconnaissance squadron. It explored the operational environment that a squadron will be expected to operate in, which is diverse terrain interspersed with urban centers, engaged with numerous actors, some hostile, some non-adversarial and others cooperative. These actors will be a mix of state and non-state actors in complex battlespace conducting the full spectrum of military operations. Next, a review of the tasks expected of a reconnaissance squadron was completed. This was primarily done by reviewing the explicit tasks articulated in *Ground Manoeuvre Reconnaissance*, based on the core capabilities and the implied tasks found in *Brigade Tactics (Draft)*, which forms the basis of the common army understanding of the role and purpose of an armored reconnaissance squadron.

A review of deployed and trained armored reconnaissance squadrons in operational deployments since Kosovo illustrated how the force employed the squadron and the doctrinal squadron have differed. Finally, in order to properly situate the proposed organization and analysis, a review of the underlying organizational theory

revealed key organizational methods that present both efficiency and effectiveness in the achievement of mission with redundancy, flexibility, and span of control optimized.

Within the literature reviewed, specifically in professional Canadian Army publications such as the *Army Journal* and the *Armour Bulletin*, where one would expect to find capability based discourse; there is a lack of proposed structure based on capability, task or equipment. The *Armour Bulletin* serves as an excellent forum to discuss potential organizational solutions but generally lacks the academic rigor necessary to support such proposals while the *Army Journal* is often at echelons above the armored reconnaissance squadron and focuses more on concepts of ISTAR integration vice execution. This creates an opportunity gap in the currently available literature, which this analysis will seek to fill.

## CHAPTER 3

### RESEARCH METHODOLOGY

If the mind is to emerge unscathed from this relentless struggle with the unforeseen, two qualities are indispensable: first, an intellect that, even in the darkest hour, retains some glimmerings of the inner light, which leads to truth; and second, the courage to follow this faint light wherever it may lead.

— Carl von Clausewitz, *On War*

As illustrated in chapter one, the role, organization and function of an armored reconnaissance squadron is neither well understood nor implemented within current Canadian Army formation. Without an instinctive understanding and congruence of the role, organization and function, Brigade Commanders and their staffs often assign tasks that range from overwhelming to under employing the squadron. As such, the key question that this project posed was what is the optimal mix of capabilities to constitute a CMBG's armored reconnaissance squadron. To research and inform the answer one has to understand the problem the capabilities will solve and why they should be situated in one organization.

#### The Approach

In order to propose valid, fundamentally sound, structured solutions to the question, a mixed and multi stepped approach was undertaken in the analysis. The approach consisted of two processes. The first, content analysis, is a method of retrieving meaningful data from base or foundational documents (Flick 2014). In this analysis, Canadian Army doctrine provided the source documents. Data extracted from the analysis included the explicit and implicit missions and tasks in Canadian Army doctrine that an armored reconnaissance squadron could be expected to complete. Then based on



these squadron level tasks and missions, an assessment of the sub-squadron capabilities required to achieve these tasks was made. Once the capabilities were understood, they were compared against the utility and frequency of occurrence they serve in order to achieve squadron missions and tasks in light of the OE and historical context of previous operational employments.

Following this application of content analysis to extract key capabilities, a proposed structure was created using the key themes of organizational theory. This proposed structure, in order to be valid, must achieve the mission sets assigned by the brigade headquarters in line with current doctrine and adhere to the principle of organizational theory. Specifically, the proposed organization is an independent operating entity that has redundancy, efficiency, effectiveness and responsiveness while able to meet all its mission, combat support and combat service support requirements.

### Specific Application

Doctrine was the primary source from which data was extracted, specifically *Ground Manoeuvre Reconnaissance*, and *Brigade Tactics (Draft)*. The former articulated the individual tasks that together create the effect to meet the missions assigned to the squadron. The latter described the context within which the armored reconnaissance squadron must operate and the broad scope of effects and tasks the CMBG may impose on the squadron to create.

From *Ground Manoeuvre Reconnaissance*, each category of reconnaissance task was examined including all its constituent sub-tasks. A summary of each was made, extracting the key enabling capability. Following the analysis of each sub-task, the key capabilities across all sub-tasks within a category was completed and generated a

category average of the essential capabilities to achieve the tasks within the category. This was repeated for each category of reconnaissance and once all the category averages were completed, a similar comparison was done amongst the four categories, weighted by the frequency and tendency of tasks within that category as extracted from *Brigade Tactics (Draft)*.

Within *Brigade Tactics (Draft)*, the four tactical activities were examined to determine which reconnaissance categories were most frequently invoked in attainment of the tactical activity the brigade was conducting. This preference for a reconnaissance category was used as the weighting to deduce the minimum essential capabilities required by the squadron. The capabilities required by the squadron were then weighted against the theory and principles of grouping to determine if a capability should be organic or attached to the squadron on an as required basis.

#### Justification of the Method

The reason that this multiple stepped method was selected is that first data must be extracted from the root documents so that the function can be understood, specifically, what the organization needs to do. Then an analysis was conducted of what the squadron needs to have in order to accomplish its missions against what it can execute given the OE, and organizational limitations placed on it.

Content analysis was initially developed to analyze forms of communication. Army doctrine is its own form of communications with distinct meanings, graphics and symbols as such content analysis was viewed as a suitable analysis tool. Doctrine like a foreign method of communications has its own nuanced use of words, terms, and graphics, which to the uninitiated are confusing and complicated at best, and are often

unintelligible and contradictory. Using this technique one can make the subsequent analysis of the data, objectively independent of the doctrine from which it was extracted.

With this methodology, personal bias will be removed. Researching a project so close to one's experience can lead to blindness to inherent bias. Through content analysis, data is extracted from doctrine, then that data is analyzed in light of the doctrinal context. This deliberate step-by-step process provides a logic trail that generates conclusions independent of any of the author's predispositions. If another method was utilized, such as case study, the author could select cases that support his pre-conceived notions of what an armored reconnaissance squadron should have as organic capabilities.

Organizational theory tempered by the considerations and experience of military requirements serves then as a logical place to model a capability based organization to create a structure or form to achieve the function identified in the first piece of the analysis. A caveat to note is that an argument that may be posed against this methodology is that by assuming doctrine to be the *a priori* documents then the analysis is subject to irrelevance once doctrinal changes are made. In response to that, the doctrinal aspects that are being analyzed are the fundamental operational functions. These are not how to accomplish tasks but are what tasks need to be completed. The details of how to accomplish tasks are covered in specific tactics, techniques, and procedure publications. These will frequently be updated, changed and modified based on evolving threats but the doctrine of the purpose of a reconnaissance organization will endure. Hence, this form of analysis of what the organization is expected to accomplish is valid and relevant.

## CHAPTER 4

### ANALYSIS

Go forward until the last round is fired and the last drop of gas is expended...then go forward on foot!

— General George Patton Jr

This chapter applies the analysis described in chapter three to first extract data from the current armored reconnaissance doctrine to determine capabilities, and then to conduct analysis and discussion on requisite organic capabilities and those that can be attached on an as required basis to the squadron organization. An organic capability should be one that the squadron requires to execute its routine missions and task. An attached asset should be one that improves the performance of the squadron or is a specialist capability not routinely required for the squadron's mission set.

#### Capabilities

The force type capabilities that are or should be extant in an armored reconnaissance squadron need to be analyzed in light of commonly grouped capabilities found in a unit. Chapter two outlined the generic capabilities inherent in a unit, and a reconnaissance squadron as a unit with respect to its operation in support of a brigade must contain or have access to those capabilities. Specifically eight distinct capabilities will form the basis of this analysis. These capabilities are: mounted reconnaissance elements, dismounted reconnaissance elements, an anti-armor or direct fire capability, indirect fire support, mobility/counter-mobility, aerial surveillance, combat service support elements and finally command and control elements.

Reconnaissance elements, both mounted and dismounted, are the foundation of any reconnaissance organization. Those elements find the information and are the lead troops of the unit or formation they are supporting. Mounted elements refers to reconnaissance troops whose main platform is a combat vehicle that enables them to travel in front of a force, over most types of terrain and generally has some type of enhanced sensors or optics to assist in the execution of their tasks. Dismounted reconnaissance elements are those that primarily obtain their information through dismounted patrols and observation posts. They are limited in the variety of sensors they can employ on a task but are more capable to get closer to targets to gather detailed information and can navigate and operate effectively in restrictive and/or complex terrain.

Anti-armor or direct fire capability enables the squadron to defeat enemy reconnaissance assets, defend itself for a limited time against opposing mechanized and armored forces, and conduct reconnaissance by fire to determine enemy reactions (DND 2015b, 2-1-4). Indirect fire permits reconnaissance elements to break contact with the enemy, shape its movements in favor of the higher headquarters plan and conduct deep strike for the supported formation.

Mobility and counter-mobility assets enable a squadron to complete its mission sufficiently away from the main force to either identify and report, surmount, or emplace and enhance obstacles; thereby enabling the main force through freedom of movement or protection. Additionally, in this hybrid threat world, mobility assets also allow squadrons to maneuver throughout areas that may be prone to improvised explosive devices or other non-conventional mobility threats. Aerial surveillance platforms, such as the current suite of tactical unmanned aerial systems, enable a squadron to shape its ground movement and

cue other squadron assets. This capability would allow a squadron to acquire enemy and contacts prior to ground maneuvers, ideally, retaining the initiative vice chancing a meeting engagement between two opposing reconnaissance elements.

The final two capabilities are combat service support elements and command and control elements. Combat service support elements include the requisite logistics, maintenance, and medical support the squadron needs to enable the other elements to continue with their tasks. The combat service support element is an organization that varies in size and scope based on the equipment resident in the squadron. With a greater variety of weapon systems or vehicle types there will be a corresponding increase in resources it will be required to possess. The command and control element will be required to exercise control over its subordinate elements and maintain communications with its higher headquarters. Given that these two capabilities are essential for the squadron to execute its mission and are essential to its existence, these will not be broken out in the subsequent sub-analyses but presented as part of each of the four broad categories, from Table 1.

### Analysis of Tasks

From chapter two, there are four broad categories of tasks: reconnaissance tasks, surveillance tasks, security tasks and a broad catchall of additional tasks. Each category has a propensity to the types of force capabilities required and a frequency with which they are assigned based on the phase of war in which one is currently operating.

## Reconnaissance Task

Reconnaissance tasks include traditional activities such as route, area, point and zone reconnaissance, reconnaissance in force, and Chemical Biological Radiological and Nuclear (CBRN) reconnaissance and survey. These tasks, undertaken in advance of another force's movement, provide information on the opposition, terrain and condition of the operating environment. During the conduct of this category of tasks, reconnaissance forces, as the lead elements of formation, frequently encounter obstacles, opposing reconnaissance and/or counter-reconnaissance forces, and irregular forces. To that end, reconnaissance tasks as a category require more robust forces than the other categories of tasks.

Route reconnaissance missions are undertaken to gain detailed information on obstacles, enemy and condition of the route and also any terrain or enemy that may affect movement along a designated route. During the conduct of this type of operation, emphasis may be placed on either the terrain or the enemy based on the commander's priorities. The armored recce squadron with its organic and task tailored capabilities strives to ensure the route is free of obstacles and enemy threat. Given this requirement, the capabilities required for a route reconnaissance are mounted reconnaissance to define the route, as well as anti-armor/ direct fire, mobility, and indirect fire to clear the route of enemy and obstacles (DND 2015b).

The aim of area reconnaissance operations are to gain information on the enemy and terrain in a specified area as quickly as possible. Information gained from the specified area is prioritized over information collected enroute, hence movement to the area is conducted using best speed and ground, reporting and bypassing obstacles and

enemy contacts enroute. Area reconnaissance operations place a higher premium on stealth and gaining the information over security; ergo the required capabilities are mounted and dismounted reconnaissance to define the area, UAV assets to help maneuver the ground force, and indirect fire assets to facilitate bypassing and disengaging from encountered enemy (DND 2015b).

Similar to area, point reconnaissance missions prioritize information of the point over the surrounding areas and the transit to, again reporting and bypassing obstacles and enemy contacts enroute. Point reconnaissance missions are assigned when detailed information is critical to the success of an operation, in a specific location such as bridges or potential crossing sites. Point reconnaissance tasks are often nested as part of other reconnaissance task; so a point reconnaissance of a bridge may be part of a larger route reconnaissance mission. Capabilities required to execute a point reconnaissance are similar to area reconnaissance missions. The specific capabilities required are mounted and dismounted reconnaissance elements, UAV assets to define the point, and indirect fire assets to facilitate bypassing and disengaging from encountered enemy (DND 2015b).

The squadron executes zone reconnaissance when a commander requires tactical information on the routes, terrain, obstacles and enemy within in a zone prior to moving the main force through. Key tasks during the conduct of this type of operation are the inspection and assessment of terrain for its military use. This assessment includes identifying availability of natural resources; determining the quality of routes in the zone by inspecting and classifying all bridges, fords tunnels, overpasses and other obstacle crossing sites; locating and marking all obstacles and barriers to include bypass routes;



and identifying all enemy locations and potential threats. Clearly, a zone reconnaissance is a very significant undertaking and because of the large amount of terrain and enemy detail needed, it is a very time intensive task. The capabilities needed to execute a zone reconnaissance are mounted and dismounted reconnaissance assets to define the zone and specific aspects, a UAV to help maneuver ground assets in order to increase the speed that the task can be completed, mobility assets to aid in the marking of bypasses and classifications of infrastructure. Additionally, indirect fire assets should be available to assist the squadron in its maneuver (DND 2015b).

The aim of a reconnaissance in force operation is to force the enemy to reveal its location, size, strength and layout by forcing it to respond to robust offensive action. By forcing the enemy to react, exploitable vulnerabilities in the enemy's disposition or location of key weapons systems can be identified. A commander conducts a reconnaissance in force when he cannot gain sufficient knowledge of the enemy or when he is in restrictive terrain when smaller reconnaissance forces are vulnerable to ambush. Since reconnaissance in force operations are deliberate combat; they are not normally conducted by reconnaissance force, but by an ACT element augmented by reconnaissance forces<sup>9</sup>. The squadron providing support to the ACT element conducting the reconnaissance in force will execute other reconnaissance task such as point or area reconnaissance in support of the force it is augmenting (DND 2015b). As such, the capabilities required of the armored reconnaissance squadron in support of

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<sup>9</sup> Units, such as infantry or armored, whose primary operational combat function is ACT are better suited to direct the offensive operations required of reconnaissance in force task. Hence the SENSE function provided by the reconnaissance squadron augments the ACT unit's offensive capability in this type of operation.

reconnaissance in force operation are the same as those required for route and zone reconnaissance.

Counter-reconnaissance is one of the four core capabilities of a reconnaissance force and is the “identification, targeting, destruction and/or neutralization of adversary recce assets” (DND 2015b, 3-2-16). These actions provide security for protected forces and are generally part of covering, flank or guard tasks. In order to accomplish these effects, a squadron must have mounted reconnaissance assets, anti-armor/ direct fire capability, counter-mobility and indirect fire assets.

Within *Ground Manoeuvre Reconnaissance*, there are two types of CBRN tasks; a CBRN reconnaissance and a CBRN survey. A CBRN reconnaissance is executed to confirm or deny the existence of a CBRN hazard in a specified location, whilst a CBRN survey is conducted to determine the level of contamination and to mark the area of contamination to ensure follow-on-forces are not exposed by traversing the contaminated area. CBRN reconnaissance is conducted as part of another reconnaissance task such as a route, area, point or zone with integral, existing forces (DND 2015b).

CBRN survey operations are deliberate operations that are time intensive and require dismounted teams to measure the extent, severity and to mark the limits of contamination. Additionally they require a security element to provide over-watch during the execution of the survey and potentially barricade routes into the area (DND 2015b). The required forces for this type of mission are mounted and dismounted reconnaissance forces and counter-mobility assets.

Table 2 provides a summary of the analysis of the individual tasks constituent in reconnaissance task operations. Common capabilities with a high frequency of

occurrence are mounted and dismounted reconnaissance, mobility/ counter-mobility, indirect fire, and UAV. The UAV is an asset, which enhances and enables quicker and more informed movements. It is not necessarily a capability that will be the key asset or detractor from a task; it is an enabler to a mission vice a primary means of collection for the armored reconnaissance squadron.

Table 2. Summary of Capabilities required for Reconnaissance Tasks

Reconnaissance Tasks							
	Route	Area	Point	Zone	Reconnaissance in Force	Counter-Reconnaissance	CBRN Tasks
Mounted Reconnaissance	X	X	X	X	X	X	X
Dismounted Reconnaissance		X	X	X	X		X
Anti-Armor/ Direct Fire	X				X	X	
Mobility/ Counter-Mobility	X			X	X	X	X
Indirect Fire	X	X	X	X	X	X	
UAV	Enhances and enables conduct						
Logistics Support	X	X	X	X	X	X	X
C2	X	X	X	X	X	X	X

*Source:* Created by author.

### Surveillance Tasks

Surveillance tasks are undertaken by the armored reconnaissance squadron to provide early warning to a protected force on the location, strength and movement of the enemy. It must avoid becoming involved in direct fighting, and instead employs indirect fire and air support to influence identified enemy.

A screen is a surveillance task where the force conducting the screen has the primary task “to observe, identify and report information, and which only fights in self-protection” (DND 2015b, 3-4-1). A screen will generally be composed of reconnaissance elements, supported by indirect fire assets. Screens are executed in two manners that are distinct enough to warrant separate treatments. The first type is a mobile screen that moves to provide early warning in support of a moving force, and the second is a static screen in support of stationary force such as one preparing a main defensive area. The essential task of both types of screens is to ensure no enemy elements pass through the screen undetected or unreported. A screen is situated sufficiently far from the protected force to allow it to react to the warning it provides. The screen itself consists of three elements: an observation post (OP) line, patrolling within the security zone between the OP line and the protected force, and command and control and combat service support to enable the screen to operate independent of the main force and have a robust communications architecture to remain in communications (DND 2015b).

A mobile screen is not ground oriented but instead, focuses on the force to which it is providing warning. It is employed in the front, rear or to the flanks of the protected force; it must cover the entire width or depth of that force depending on its orientation. As the protected force moves, the screening force occupies a series of successive positions constituting the screen (DND 2015b). Key capabilities to enable this are mounted reconnaissance troops, UAV or other aerial sensors to cover gaps or extend coverage when screening in front of particularly large forces, such as the case when an armored reconnaissance squadron conducts a screen for a CMBG. Additionally mobility assets enable the screening force to quickly navigate any obstacle, natural or man-made,

during movement and limited indirect fires to facilitate movement of sub-elements of the screen, especially if they need to disengage from enemy.

A static screen is the early warning of enemy movements to a static protected force. The most common application is to have a static screen positioned along the frontage of a main defensive area or in defense of a forward operating base. Like the mobile screen, it must effectively provide detection and reporting of enemy elements passing through. However, given its stationary nature it must be much more thorough and persistent in its detection ability to prevent infiltrations. During the execution of a mobile screen, gaps in coverage or the security zone can be covered by a UAV or other elements as they reposition along the movement corridor. With a static screen, however, the gaps and seams between the OP line must be patrolled by persistent mounted and dismounted elements (terrain dependent) to ensure detection of any approaching forces (DND 2015b). Thus, the required capabilities for the conduct of a static screen are mounted and dismounted reconnaissance elements with UAV in support to aid in the cueing of security zone patrols. Additionally, counter-mobility capabilities can limit the number of avenues of approach and enhance screen line survivability. Access to some indirect fire capability will allow the withdrawal of the OP line or any other element that may become decisively engaged by enemy actions.

OP tasks are fixed points from which areas, points or approaches can be observed. Once they have gained observation they can either form the basic building block for other surveillance and security tasks or enable indirect and aerial fires to affect enemy targets. To gain information, OPs use a variety of sensors ranging from sophisticated electromagnetic and optical sensors, such as radar and infrared sensors, to weapon siting

systems and individual soldiers with a pair of binoculars (DND 2015b). The key capabilities of OPs, given their need for persistence, are both mounted and dismounted reconnaissance elements and access to indirect fire capabilities to allow withdrawal or interdiction without detection.

Surveillance tasks are much more passive than reconnaissance tasks, and the lack of any requirement for anti-armor or direct fire capability is evidence of it. Table 3 summarizes the capabilities deduced to be essential for the conduct of surveillance tasks and these are both mounted and dismounted reconnaissance elements, robust command and control and access to indirect fire. Other enablers such as UAV and mobility/counter-mobility capabilities enhance the armored reconnaissance squadron to better execute the task and reduce the risk of not meeting the intent of those missions.

Table 3. Summary of Capabilities required for Surveillance Tasks

Surveillance Task			
	Mobile Screen	Static Screen	Observation Post
Mounted Reconnaissance	X	X	X
Dismounted Reconnaissance		X	X
Anti-Armor/ Direct Fire			
Mobility/ Counter-Mobility	X	X	
Indirect Fire	X	X	X
UAV	X	X	
Logistics Support	X	X	X
C2	X	X	X

*Source:* Created by author.

## Security Tasks

The next category is security tasks, which in some aspects are extensions of surveillance tasks, and in actuality are the transition from passive reporting to providing more protection and security by controlling movement and countering enemy threats.

Lines of communication (LoC) security tasks are undertaken to protect traffic along routes and to protect the actual routes from being disabled by obstacles and direct or observed indirect fires. These routes include the railway, waterways and roads that are utilized to support the force. These tasks are generally defensive in nature and terrain-centric. In order to ensure LoC security, four broad tasks are conducted. First, patrolling along and parallel to routes in sufficient strength to clear potential ambush locations, and note changes or degradation to the route conditions. Second, picketing the route consists of static OPs observing key locations along the route. The other two tasks are support to route clearance patrols and movement control. Capabilities required to conduct LoC security task are mounted and dismounted reconnaissance, mobility assets, and direct fire. The addition of UAV capability expands the scope and scale of LoC security (DND 2015b).

Presence and framework patrolling is conducted to create a secure environment to allow for the conduct of normal civic activity and to allow freedom of movement for security forces and other agencies. These tasks are conducted to increase the level of security in rear areas during high intensity fighting or during steady state operations as part of sector stabilization and population engagement (DND 2015b). Capabilities needed for this task are mounted and dismounted reconnaissance.

A guard is a security task whose key function is to protect a force. It does so by detecting and reporting enemy moves, and subsequently fighting to defeat, delay, repel or fix the enemy to prevent it from interfering with the protected force. Essential component tasks of a guard are defeat or repel enemy forces, maintain constant surveillance of avenues approach to the protected force, identify enemy disposition, and maintain contact until handover to another element. In order to accomplish these sub-tasks there are five elements of a guard: (1) a screen line to include patrols of the security area, (2) kill zones, (3) blocking and hasty defensive positions, (4) command and control, and (5) combat support elements. In order to achieve this mission, the capabilities needed in the armored reconnaissance squadron are the same as in a static screen with additional anti-armor and direct fire capabilities. However, in order to achieve the necessary force overmatch to protect the force, the squadron would need the allocation of additional ACT assets, such as infantry, armor or attack helicopter, to ensure probability of success (DND 2015b).

Flank security is a task that provides security to a formation or unit's flanks. It is planned and executed similar to that of a guard or screen, dependent on the purpose assigned by the commanders. As such, flank security tasks require the same capabilities as guards (DND 2015b).

Convoy and VIP escort missions are conducted when there is insufficient security along LoCs and when a convoy or VIP needs to move within the battlespace. Escort missions are offensive in nature and the essential tasks to achieving them are reconnaissance of the escort route, obstacle clearance along the route, and early warning of enemy forces (DND 2015b). With these tasks in mind, the required capabilities are



mounted reconnaissance, direct fire, and mobility support. Addition of UAV assets enhances the warning and cueing of forces but is not critical to conducting the task.

Vital point and critical infrastructure security are defensive tasks undertaken to protect infrastructure or point, such as hydroelectric dams, bridges, or anything else deemed essential by the commander. Reconnaissance forces conduct vital point and critical infrastructure security tasks to deny their use or destruction by the enemy. These tasks involve establishing perimeter security around the protected asset, with various surveillance tasks such as OPs and screens. Additionally, forces are required to conduct defensive operations including counterattacks or ambushes (DND 2015b). In light of the previous, capabilities required for this task set are mounted and dismounted reconnaissance elements to aide in the detection along with direct and indirect fire assets to conduct the attacks and execute the defense of the protected asset.

Movement control is the use of military force to monitor, regulate, and direct the movement of goods, people, and vehicles along LoCs and their approaches within a defined area. The three principles of the movement control task are vehicle checkpoints (VCPs), roadblocks, and traffic control points. Inherent in these tasks are route marking and guiding.

Roadblock and VCP tasks have similar components and tasks. The essential difference is the former completely stops any penetration along a route while the latter conducts searches of vehicles before allowing them to continue along the route. Essential elements to the conduct of these two security tasks are early warning through covert observation, temporary counter-mobility and protection (DND 2007b). With those

considerations, essential capabilities are mounted and dismounted reconnaissance and counter-mobility capabilities.

Traffic control tasks may occur during any operation and are used to regulate vehicle and personnel movement in accordance with a higher formation's plan to achieve a specific force posture at the end of the movement. Component elements of a traffic control task are a regulating headquarters, sector headquarters, traffic control points and roving reconnaissance elements. The regulating headquarters controls all movement within the traffic-controlled area, while a sector headquarters facilitates ease of control if the move is long or has potential to become very congested. Individual traffic control points direct, turn, hold or speed up elements moving in the traffic control plan to meet the schedule and force disposition dictated. Lastly, the reconnaissance elements move along the route to reconnoiter and verify traffic flow between control points reporting any problems or deviations from the movement plan. With this in mind traffic control tasks are very dependent on mounted reconnaissance and command and control capabilities.

Tables 4 and 5 provide a summary of the capabilities required to complete each security task. Consistently through the category of tasks, key capabilities required are mounted and dismounted reconnaissance elements, indirect fires and for the more force oriented ones, such as guards, vital point security and LoC security, a form of direct fire capability.

Table 4. Summary of Capabilities required for Security Tasks

Security Tasks						
	LoC Security	Presence & Framework patrolling	Guard	Flank Security	Convoy/ VIP Escort	Vital Point & Critical Infrastructure Security
Mounted Reconnaissance	X	X	X	X	X	X
Dismounted Reconnaissance	X	X	X	X		X
Anti-Armor/ Direct Fire	X		X	X	X	X
Mobility/ Counter-Mobility	X		X	X	X	
Indirect Fire			X	X	X	X
UAV	Enhances and enables conduct					
Logistics Support	X	X	X	X	X	X
C2	X	X	X	X	X	X

Source: Created by author.

Table 5. Summary of Capabilities required for Security Tasks

Security Task			
	Movement Control		
	VCPs	Road Blocks	Traffic Control
Mounted Reconnaissance	X	X	X
Dismounted Reconnaissance	X	X	X
Anti-Armor/ Direct Fire			
Mobility/ Counter-Mobility	X	X	
Indirect Fire			
UAV			
Logistics Support	X	X	X
C2	X	X	X

Source: Created by author.

### Additional Tasks

In addition to their primary reconnaissance, surveillance, and security tasks, armored reconnaissance squadrons can operate in intimate support to dismounted infantry in certain circumstances, and conduct economy of effort operations in the brigade AO. Within doctrine, they are known as support to cordon and search operations and support to offensive and defensive operations.

Support to cordon and search operations involves isolating the designated area by cordoning it off and assisting in the systematic search of the area. To complete the isolation of the designated area, the armored reconnaissance squadron will utilize a combination of roadblocks, OPs, or even a guard. Dismounted elements in conjunction with SHIELD and intelligence assets conduct the search of the area (DND 2007b). The capabilities required for support to cordon and search operations are based off how the cordon is conducted. If a squadron were supporting a cordon and search operation through a guard then the capabilities required would be the same as that of a guard, while if they were conducting a series of roadblocks then it would require those capabilities. Given this diversity, the key capabilities are mounted and dismounted reconnaissance elements and counter-mobility assets.

The armored reconnaissance squadron conducts support to offensive and defensive operations to either enable a main force or as an economy of effort operation elsewhere in the formation's AO. Enabling tasks include marking, guiding, cueing, direct fire support and overwatch. These tasks are specific applications of traffic control process, OPs, and application of direct fires. The resultant requirement for capabilities are mounted and dismounted reconnaissance, and extensive command and control. During

the conduct of economy of effort operations, reconnaissance forces conduct either offensive or defensive operations with the available forces (DND 2007b).

Overall, additional tasks, are operations that reconnaissance forces can conduct within the task sets previously discussed. Table 6 presents a summary of the requisite capabilities for the squadron to execute the additional task category. However, because these tasks are already covered and specific applications of other tasks, they are repetitious and will not be weighted toward the final assessment of the recommended capabilities.

Table 6. Summary of Capabilities required for Additional Tasks

Additional Tasks		
	Support to Cordon and Search Operations	Support to Offensive and Defensive Operations
Mounted Reconnaissance	X	X
Dismounted Reconnaissance	X	X
Anti-Armor/ Direct Fire		
Mobility/ Counter-Mobility	X	
Indirect Fire		X
UAV	X	X
Logistics support	X	X
C2	X	X

*Source:* Created by author.

### Summary of Analysis

Table 7 lists a consolidated summary of tasks required within each reconnaissance category. It reflects the conclusion made for each category based on the constituent tasks. These task capabilities were determined, within current doctrine, to be the ones required

to successfully complete the tasks as articulated. Other assets, such as UAV are mission enablers that enhance the execution and speed with which these tasks can be completed but are not critical assets needed by an armored reconnaissance squadron to complete its missions.

Table 7. Summary of Capabilities by Task Category

Task Categories				
	Reconnaissance	Surveillance	Security	Additional
Mounted Reconnaissance	X	X	X	X
Dismounted Reconnaissance	X	X	X	X
Anti-Armor/ Direct Fire			X	X
Mobility/ Counter-Mobility	X		X	X
Indirect Fire	X	X	X	X
UAV				
Logistics Support	X	X	X	X
C2	X	X	X	X

*Source:* Created by author.

#### Frequency of Category Task

The CMBG as a tactical organization executes the four tactical activities: offensive, defensive, stability, and enabling operations (DND 2008b, 3-18). Within these activities, the CMBG assigns tasks to individual units that when superimposed create the effect required within the OE. The armored reconnaissance squadron conducts tasks found within the four broad reconnaissance categories; reconnaissance, surveillance, security and additional, due to its utility and unique mission capabilities.

Prior to the commencement of offensive operations, the armored reconnaissance squadron along with other ISTAR assets determines the enemy disposition including obstacles, orientation, and key weapons system locations. Other tasks are to verify approach routes to the objective for the assault forces as well as possible reinforcement or withdrawal routes for the enemy. During the conduct of offensive operations, the armored reconnaissance squadron will primarily conduct reconnaissance tasks to cue and enable the brigade to conduct its offensive task.

According to *Brigade Tactics (Draft)*, defensive operations are undertaken “due to strategic/ operational direction, weakness relative to the enemy, or to secure key or vital terrain” (DND 2016, 4-1). Within defensive operations the armored reconnaissance squadron, in conjunction with other ISTAR assets, will primarily be focused on determining the enemy approach routes, strength, and disposition, as well as identifying key weapon systems, equipment, reserves and unit types. To accomplish this, the CMBG typically gives the reconnaissance squadron a screen or guard task between the brigade and the enemy’s approach maintaining other low density, high value ISTAR assets closer to the actual defensive location. Subsequently the squadron will be used to conduct security operations in the rear or conduct forced rest in preparation to resume the advance after a successful defensive battle.

The purpose of stability operations is to create the conditions to enable civilian, military and host nation actors to deliver a political settlement to a crisis. The manifestation of stability operations within the CMBG serves to create and build a security environment. Concurrently, reconstruction efforts under other lead agencies will facilitate governance and development within the area (DND 2016). Stability operations

depends greatly on understanding the environment, the actors, and the rate of change in the OE. Units conducting these operations have a wider breadth of responsibilities than normally found during warfighting. The armored reconnaissance squadron in stability operations will for the most part conduct surveillance and security task enabling the intelligence process and permitting other agencies to empower governance and infrastructure building (DND 2013, 3-2).

Enabling operations facilitate the transition between tactical activities. These operations typically involve security tasks to protect the force as it conducts replenishment and any necessary re-organization prior to the execution of the new mission. Further, reconnaissance tasks can also be assigned in order to provide key information to the headquarters prior to its forces moving in or through an area (DND 2016).

#### Ad Hoc and Specialist Grouping

Ad hoc grouping in military operations provides a capability to a unit or sub-unit that it does not normally have under normal circumstances. It is also referred to as task tailoring an organization. The benefits of this style of attachment is that it allows scarce resources to be placed where they have the greatest effect and most benefit. The drawbacks are that there are frequently frictions induced by support requirements, expectations of the attached and receiving organizations and time required to understand the style and operating procedures of the commander and the new organization.

Chapter 2 outlined that with the theory of organization and grouping, there are many ways to group; one way is by activity. In grouping by activity, like is grouped with like. The benefit of this method is it eases training and resource allocation. In terms of



military application, this occurs especially with highly specialized or technical trades where continuation training, low-density high-demand resources and specialized technical skills group all of these types of trades into one unit. This is often seen with two capabilities that have repeatedly been required by the armored reconnaissance squadron in the analysis of the task. First is mobility and counter-mobility support, which in the Canadian Army are provided by combat engineers. Combat engineer regiments exist as force generation units in garrison, and their constituent squadrons are detached out to battlegroups and units during operations to provide mobility and counter-mobility support. The armored reconnaissance squadron, as a brigade unit, requires some form of mobility and counter-mobility capability in the form provided by combat engineers. It however, does not have the capability nor the expertise to provide training to the degree necessary to maintain and certify some of the more technical skills, such as demolitions. Additionally, there are rarely sufficient numbers of combat engineers to satisfy all requirements in the brigade and hence they are prioritized in their tasks. Given the lack of technical ability within an armored reconnaissance squadron to sustain technical training and given the constant demand on engineer resources at the brigade level, it is more beneficial that mobility and counter-mobility assets remain centrally controlled. This then permits attachment of these assets to the squadron as required to perform the requisite task after which they can be reassigned to other priorities within the CMBG.

Access to indirect fire is the other capability that the armored reconnaissance squadron frequently requires. The indirect fire capability is found in the brigade's artillery regiment. Access is provided through a Forward observation officer. This is sufficient to provide access to the indirect fires of the brigade and as an avenue to gain

access to air assets that may be provided. There is a caveat based on tactics and the threat. In order to prevent early unmasking of the artillery regiment, it may not fire until required by the main force. This would then eliminate any support to the reconnaissance squadron. Furthermore, given the large distance typically involved in the modern OE, the squadron may very well be operating outside of the range the CMBG's artillery support. As such, the best solution would be to provide the squadron with a permanent organic indirect fire element such as a mortar troop, with the ability to coordinate with the artillery regiment.

Direct fire and anti-armor assets were seen to enable squadron's task sets during the analysis. Both *Brigade Tactics (Draft)* and *Ground Manoeuvre Reconnaissance* however, clearly indicated that the squadron does not have organic direct fire or anti-armor assets. Further, doctrine was also clear that the formation assigning tasks, requiring the squadron to utilize those assets, would need to provide direct fire assets to the squadron. Given the assumption that doctrine is fundamentally correct and that units and formations will act in accordance with doctrine, such as *Waypoint 2018: The Canadian Army Advancing Toward Land Operations 2021*, then direct fire and anti-armor assets though critical to some mission sets are not essential to be organic to the squadron completing its task set as envisioned by doctrine.

This analysis has distilled the required capabilities of an armored reconnaissance squadron operating in the context of a CMBG. It has also outlined the constraints with grouping technical trades and the frequency and type of task the CMBG may assign to the squadron. Thus, the capabilities required organic to an armored reconnaissance squadron are a mounted and dismounted reconnaissance capability, a squadron headquarters, administrative troop and indirect fire asset, such as a mortar troop. The

analysis also determined that it is sufficient to group mobility/ counter-mobility and direct fire assets in an ad hoc manner with the squadron, but they are not required to be permanently organized as part of the squadron's organic troops.

## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

The final test of a leader is that he leaves behind him in other men the conviction and the will to carry on.

— Walter Lippmann

#### Review

This research set out to determine the optimal mix of organic capabilities that should constitute a CMBG's armored reconnaissance squadron. A review of current doctrine was completed to ascertain both the current doctrinal squadron structure and the implied capabilities based on the tasks expected of it. During the review of the doctrine, it was determined that the expected and probable tasks advocated extensive use of capabilities that were not already resident within the squadron.

Figure 2 (Chapter 2) represented the current doctrinal structure of an armored reconnaissance squadron. It included three mounted reconnaissance troops (medium), a light mounted reconnaissance troop (unmanned), a squadron headquarters and an administrative troop. The mounted reconnaissance troops (medium) are the workhorses of the organization and from the analysis perform the majority of the tasks for the squadron. The administrative and headquarters troops are key to enabling the squadron to operate over vast distances independent of its supporting formation. The light mounted reconnaissance troop is tasked to perform the duties of dismounted reconnaissance, however, given that it is currently neither manned nor force generated for operations it needs to be included as a manned and equipped capability in the organic structure of the squadron.

The benefits and drawbacks of ad hoc organizations in general provided the understanding that this type of grouping had a role in managing limited resources or allowing functions to be grouped for training or administration and then subsequently re-grouped for employment or deployment. The analysis determined that the armored reconnaissance squadron must possess a variety of capabilities in order to accomplish its task set. The armored reconnaissance squadron structure is capable of supporting only new capabilities that can be easily integrated into the squadron with little burden. Specialist capabilities would impose a burden and are more amenable to ad hoc groupings. Thus, ad hoc groupings are a fact of reality that needs to be balanced with effectiveness in the squadron and efficiencies in training, administration of resources, and management of limited technical specialists.

### Recommendations

Based on the analysis of tasks and capabilities this doctrinal-based research found that a CMBG's armored reconnaissance squadron requires significant mounted reconnaissance elements, a dismounted reconnaissance element capable of sustained patrolling independently or whilst augmenting the mounted elements, and an indirect fire element capable of supporting the squadron while isolated from the formation. Additionally, as with any military unit that operates independently there is a requirement for headquarters and administrative troops to support the organizations, current structures and capabilities advocated in doctrine and validated in operations support continued use of them.

Figure 3 provides a proposed armored reconnaissance squadron rooted in this analysis. It is composed of three medium mounted reconnaissance troops, a dismounted

reconnaissance troop containing a command section and three patrol sections, a mortar troop with ability to provide smoke, illumination, and high explosive indirect fire support, and finally, an administrative troop and squadron headquarters.

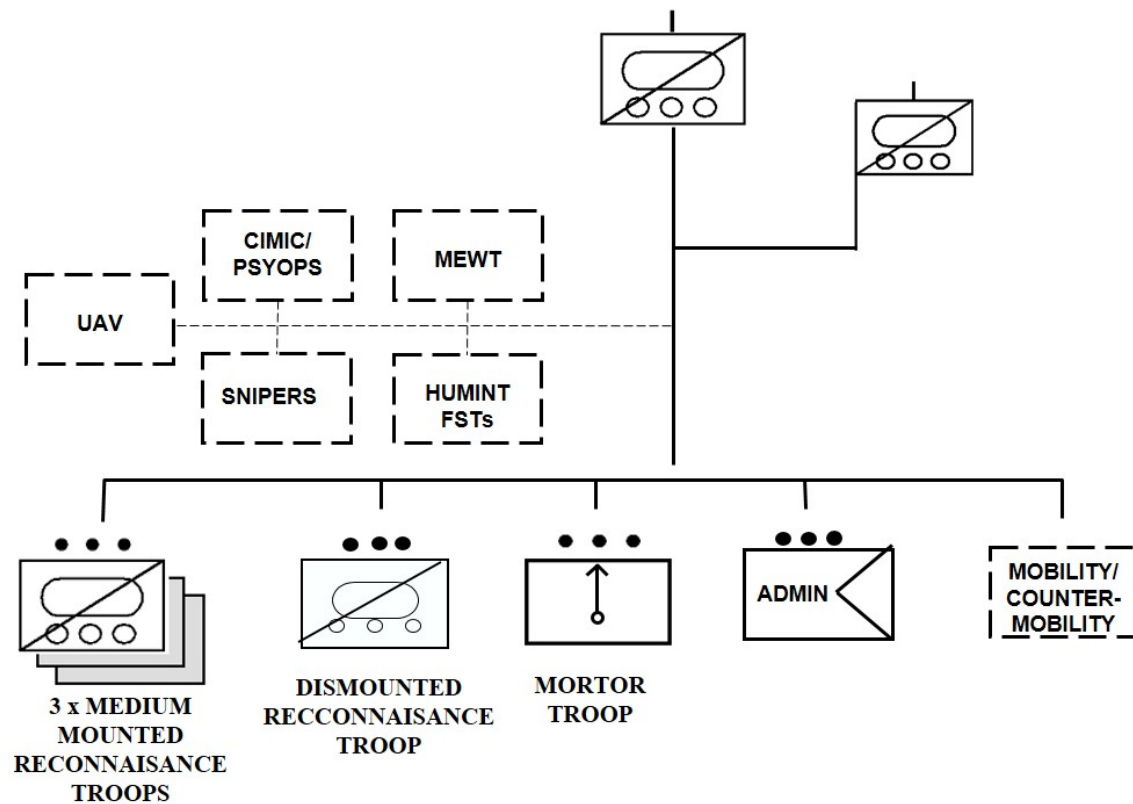


Figure 3. Proposed Armored Reconnaissance Squadron Organization

*Source:* Created by author.

This squadron structure permits the CMBG’s armored reconnaissance squadron to execute the preponderance of its tasks; however, it would still require mobility/ counter-mobility support on an ad hoc basis. Direct fire and anti-armor assets are omitted as doctrine espouses that they will be added to the squadron if required. Further, for direct combat activities like a guard, the likely scenario is that the squadron will provide the

SENSE capability for an ACT element. The addition of a mortar troop permits the squadron to have the organic assets to accomplish its mission especially since the majority of the squadron's maneuver depends on access to timely and responsive indirect fire to either allow reconnaissance troops to break contact or break up enemy organization in support of security task.

Troops and resources denoted with a dashed outline indicated other assets that can be attached to the squadron on an ad hoc basis but are not critical to the execution of the squadron's normal task set. These elements provide specialist capabilities to be used in specific circumstances. CIMIC, Psychological Operations, and HUMINT are very people based and focused operations. The squadron would only have need of these capabilities when they are tasked to engage with the population or provide specific effects on them. Similarly, snipers and the MEWT provide unique targeting and sensory data that require more time to establish and become effective. Additionally, within the CMBG these aforementioned resources are also required by the battlegroups. Like mobility and counter-mobility assets, the CMBG assigns these elements to the priority tasks and units completing those tasks. To note from figure two to three the infantry reconnaissance platoon has been omitted. If the squadron has a dismounted reconnaissance troop as determined to be critical in the analysis, then the infantry reconnaissance platoon is a duplication of effort and can be better utilize with its parent infantry battalion.

Although valuable as an enabler to finding and detecting, UAV support due to its technical and proscriptive continuation training demands is a capability that should remain centrally managed and attached with the reconnaissance squadron as required. It is also a capability like electronic warfare that can support the ISTAR process

independent of the armored reconnaissance squadron and should not be bound to it, which would in turn stifle its flexibility to support other brigade SENSE tasks.

This analysis was undertaken with a view to identifying a doctrinally based organization for an armored reconnaissance squadron. It found that the current structure advanced in doctrine did not adequately resource the squadron to accomplish the task it was expected to complete. Simultaneously, investigation into the feasibility of ad hoc groupings was completed. It was determined that for specialist high demand capabilities that ad hoc attachments made to the squadron were sufficient. Non-specialist capabilities like indirect fires, which enable the squadron to complete its mission sets were determined to be critical and therefore some capability should exist organic to the squadron. Mortars are the ideal non-specialist capability. They require less soldiers to operate than guns or howitzers and are much more transportable. Further, a mortar troop like a FOO, provides access to the artillery regiment within the CMBG. This facilitates coordination, de-confliction of indirect fires and access to additional indirect fire resources if required. This is the same capability provided by a FOO with the added benefit of organic indirect fires; this makes a mortar troop very suitable to maneuver with and in support of an armored reconnaissance squadron.

This is a first step in aligning the armored reconnaissance squadron's organization to match the capabilities deduced from doctrine. With a purposefully constructed armored reconnaissance squadron capable of completing its doctrinal task, the opportunity exists within the Canadian Army to rationalize the number of reconnaissance squadrons to align with the number of CMBGs in accordance with doctrine. This analysis of doctrine through an unbiased methodology has revealed the organic and ad hoc capabilities that



are required for an armored reconnaissance squadron to conduct its doctrinal task in support of a CMBG.

Further study on the purpose and role of these surplus squadrons would need to be completed. Secondary and tertiary questions fall out from the proposed structure; these questions revolve around the source of the proposed capabilities; which components will provide these capabilities, will the squadron become a combined arms organization with artillery soldiers crewing mortars or will crewmen receive specialized training in the use of mortars. These questions as articulated in Chapter 1 were beyond the scope of this analysis but are a key area for potential study if the proposed structure is accepted and implemented. Additionally, as the OE and technology continue to evolve and develop, they will influence and shape doctrine. As doctrine evolves, the changes made will need to be evaluated against the capabilities in the squadron in light of emerging tasks to validate the capabilities and structures.

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